

Application No. 10/021,602  
Amendment dated September 17, 2004  
Reply to Office Action of June 17, 2004

### Listing of Claims

Claims 1-4 (canceled)

5. (currently amended) ~~[[An]]~~ A hybridization apparatus of the type providing a chamber for containing a hybridization liquid over a hybridization material immobilized ~~[[specimen]]~~ on a substrate comprising:

- a substrate comprising a substantially flat top surface adapted to support an immobilized hybridizable material ~~[[a specimen]]~~;
- ~~a spacer comprising a pair of spacer segments adapted to contact the substrate; and~~
- a cover slip comprising
  - a substantially flat bottom surface, and
  - two substantially parallel, opposed edges bounding the bottom surface,
  - a pair of spacer segments attached to the bottom surface of the cover slip, each of the pair of spacer segments extending along substantially a full length of a different one of the opposed edges and forming a hybridization chamber between the spacer segments, the bottom surface of the cover slip and the top surface of the substrate, the hybridization chamber adapted to contain the specimen when the cover slip is placed on the substrate with the spacer segments sandwiched therebetween, ~~[[and]]~~ wherein the cover slip has a thickness sufficient to provide ~~[[providing]]~~ a cover slip beam stiffness that prevents adhesion forces created by the introduction of hybridization liquid into the hybridization chamber from substantially changing permitting ~~the cover slip to maintain~~ a substantially constant distance between the bottom surface of the cover slip and the top surface of the substrate ~~when the liquid is introduced between the cover slip and the substrate~~.

Claims 6-42 (canceled)

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43. (new) A hybridization apparatus as in claim 5 wherein the cover slip is made of flat glass having a thickness of about 1 mm or more.
44. (new) A hybridization apparatus as in claim 5 wherein the cover slip is made of flat glass having a thickness greater than 0.5 mm and less than or equal to 2 mm
45. (new) A hybridization apparatus as in claim 5 wherein the cover slip has a flatness of about  $\pm 0.005$  mm.
46. (new) A hybridization apparatus as in claim 5 wherein each spacer segment is a thin bar having a width of about 0.75 mm.
47. (new) A hybridization apparatus as in claim 5 wherein the spacer segments are printed on the bottom surface of the cover slip.
48. (new) A hybridization apparatus as in claim 5 wherein the hybridizable material is arranged in a microarray.
49. (new) A hybridization apparatus as in claim 5 wherein the hybridizable material comprises a nucleic acid.
50. (new) A hybridization apparatus as in claim 5 wherein the hybridizable material comprises a protein.
51. (new) A hybridization apparatus as in claim 5 wherein the hybridization liquid facilitates hybridization reactions between complementary nucleic acids.
52. (new) A hybridization apparatus as in claim 5 wherein the hybridization liquid facilitates hybridization reactions between an antibody and antigen.

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53. (new) A hybridization apparatus as in claim 5 wherein the substrate and the cover slip are flat, rectangular glass members.

54. (new) A hybridization apparatus as in claim 5 wherein the thickness of the spacer segments is substantially constant.

55. (new) A hybridization apparatus as in claim 5 further comprising additional spacer segments along the periphery of the bottom surface of the cover slip.

56. (new) A hybridization apparatus as in claim 5 further comprising additional spacer segments on the bottom surface of the cover slip and located between said longitudinal spacer segments.

57. (new) A hybridization apparatus as recited in claim 5 wherein at least two channels are formed between the recited spacer segments for the introduction of hybridization fluid into the hybridization chamber and the venting thereof.